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Recent Progress of Iran in the Field of Science and Technology[1]

Introduction

At the beginning, I would like to extend my heartful thanks to the organizers of this august meeting, Cultural House of the Islamic Republic of Iran in Kerachi, and the esteemed Government of Pakistan for their generous invitation and hosting of this event, and wish all of them and the friends of Iran who look forward to the better relations of our two countries success and great achievements.

As you may probably know, I am a retired diplomat of the Ministry of Foreign Affairs of the Islamic Republic of Iran, a senior cultural specialist of that ministry, a research fellow and teacher of foreign religions and comparative religious studies at different universities

[1] Paper presented by Dr. Abdolrahim Gavahi, research fellow and the Head of the Department of Future Studies of the Academy of Sciences of Iran, Kerachi, Nov. 22, 2011.

and, more recently, the Head of the Department of Future Studies at the Academy of Sciences of the Islamic Republic of Iran. I suppose it is in this recent capacity and responsibility that I have been invited to talk in this gathering on the recent developments and progress in science and technology in the Islamic Republic of Iran.

For the sake of better clarity and reception, I will divide these developments into quantitative and qualitative aspects:

A. Quantitative progress of science and technology during the past thirty years

1. In the field of education

Back in 1979, at the down of the Islamic Revolution of Iran, there were only 223 higher education institutes in Iran, while in 2010, thirty years after the victory of the Revolution, this figure increased to 2158 or almost 10 times. Considering the fact that country's population has nearly doubled during this period, i.e. from 35 to about 70 million, this means that we have still enjoyed a progress of 500 per cent or five times in this area.

Also, the number of full time university professors has increased from 5580 in 1979 to 58000 in 2009, which again is about 10 times more.

2. University Students

Back in 1979, the number of new university students or those passing entrance examinations has been 56,800 students, while this figure has jumped to 1,307,060 in

2009 which is about 23 times more. Considering the previous population growth of 100 per cent, the real growth of new entries will be (23÷2=11.5) or 1150 per cent.

In this same area, the total number of college and university students has increased from 176,000 to 3, 572,000 during 1979-2009 period.

3. Research and development

Bake in 1979, the number of scientific articles of Iranian scholars published in foreign journals (ISI articles) was about 500, while this number has greatly increased in recent years, to the extent that last year 13,500 ISI articles have been published by the Iranian scholars, an increase of 27 items or 2700 per cent.

Along the same line, the volume of research projects contracted by the Iranian universities has reached the level of Rls. 2,420 billion. And the number of academic scientific societies active in different field of sciences has jumped from 78 to 200, in addition to 110 "scientific poles" recently created in Iran.

4. In the area of technology

After the victory of the Islamic Revolution of Iran, there has been a great effort to support technological achievements of the Iranian universities and high or education centers and institutionalize them in different science and technology parks and centers of science and technology development.

Nowadays there are 22 science and technology parks, 76 centers for technology development, 1395 technology units, and 11,450 technicians active in the area of technology R&D in Iran. Furthermore, while the number of patents registered in Iran during 1965-1980, period has been 841 only, in the past thirty years this figure has jumped to more than 25,000 patents, an increase of 2500 per cent.

5. Planning and Development

Back in 1979 total area of higher education facilities amounted to 127,000 square meters. Today this figure has reached 7,740,000 m^2.

B. Qualitative achievements in the past thirty years

Before explaining some specific scientifical and technological achievements of the Iranian Revolution in the areas of communication, military, essential cells, etc., let us briefly mention a few recent developments in this area which are totally new and unprecedented.

1. Preparing a comprehensive scientific plan for the country.
2. Inaugurating the Islamic World scientific website (ISC).
3. Institutionalizing the Islamic World universities' ranking system.
4. Developing an on-line system for registering Master's and Doctoral's thesis and dissertations.

5. Reviewing humanitarian disciplines in the light of the Islamic heritage.
6. Establishing Farabi Festival in the area of human/social sciences.
7. Starting 220 interdisciplinary courses in the area of Islamic sciences.
8. Promoting job-creation activities and inaugurating the first job-creation college in Iran.
9. Setting up a committee for promoting Islamic-Iranian culture and civilization.
10. Establishing the system of on-line registration and course selection for all Iranian colleges and universities.
11. Preparing an ethical manifest for the academic activities of both professors and student.
12. Establishing the society of exemplary professors of Iran.
13. Creating the scholarly board of humanities and arts sciences.
14. Running annual exhibitions of scientific and technical achievements of Iran.
15. Attaining the first rank in mathematics, mechanics, polymer, nano technology, chemical industry, and medicine in the Middle East.

Among many areas of scientific/industrial achievements of Iran during the past thirty years, following we will explain five of the more important ones which have had direct effect on all other areas as well.

1. Nuclear Technology

Although the Iranian Atomic Organization was established by Shah's regime back in 1974 with the aim of constructing twenty nuclear power plants in a period of twenty years, yet upon the victory of the Islamic Revolution of Iran this ambitious plan was postponed until 1984, at which time it once again started with even more ambition and enthusiasm.

The aim of the Iranian nuclear program, in addition to producing nuclear energy for country's huge power consumption, is to utilize nuclear technology in the areas of medicine, sanitation, veterinary science, water resources, food industry, agriculture, defense, etc.

Unfortunately, in recent years, these peaceful activities have been criticized by America and some other Western powers. They claim that Iran, having vast resources of oil and gas, does not really need nuclear power plants, ignoring the fact that hydrocarbon fuels are much air polluting and damaging.

Furthermore, as we all know, if a country can achieve nuclear technology, it can achieve a lot of progress in all areas of science and technology, thus proceeding on the path of progress and development.

Nowadays Iran stands amongst the eight countries in the world having access to full cycle of nuclear technology, utilizing this capacity in the path of pursing its peaceful objectives, under the supervision and regulations of the International Atomic Energy Agency (IAEA). Furthermore, in the last few years, Nuclear Science and Technology Research Institute has been established in Iran pursuing the goal of training research fellows in the areas of nuclear fusion, laser technology, optics, agriculture industry, etc.

2. Defense industry

Until the victory of the Islamic Revolution, Iran was importing almost all its military-defense equipments, while today, like India and Brazil, Iran is a military equipment producing country, exporting its electronic and radar equipments to more than thirty countries. In the area of armored machinery and personnel careers, Iran stands amongst the ten top countries of the world.

The list of other defensive equipments' achievement of Iran includes: Manufacturing long-range ballistic missiles, long-range artilleries, missiles, planes (Azarakhsh), missile launchers, helicopters, designing and manufacturing (Zolfaqar) advanced tanks, T 72 modern tanks, tank carriers, various kind of floating buoyant and tug boats, submarines, Shahab long-range missiles, renovating jet fighters, etc.

3. Communications industry

As you may already know, Iran has achieved the ability of making its own national satellite, thus joining the club of very few countries capable of sending a satellite into the space.

According to the American journal, New Scientist, Iran's capabilities in communications and space industries have been much more than normal expectations. Iran is also busy with the design and manufacturing a remote control satellite for monitoring/controlling natural resources, meteorology, and geology. Also, sending astronauts into space is one of the Iran's present top priorities hoped to be achieved not far into the future.

4. Nano Technology

Nano Technology is one of the man's latest scientific achievements in which Iran has attained the first rank not only in the whole region, but also amongst all the Islamic countries. In the last nano technology exhibition (Tokyo, 2009) Iran was the only country in the world which participated in that Exhibition along with the industrialized twenty countries, or the club of twenty.

It is worth mentioning that before entering the nano club, Iran's overal scientific rank was 51st. in the world and 6th. among the Islamic countries. While, nowadays, Iran ranks 19th. in the world and 1st. among the Islamic countries.

Nanotechnology is useful in the following areas: materials, medicine, hygiene and sanitary, pharmaceutical, electronics, computer manufacturing, optics, engineering, environment, biology, defense, energy, agriculture, weaving, still production, electrical industry, and many other fields.

5. Essential cells production technology

Human gene essential cells were first produced in 1998 and Iran was able to attain this technology in a few years time. According to some experts, after bio-technology, this is the second revolution in the area of biology & medicine.

In 2006, for the first time all over the world, protein map of human essential genes was prepared at Rouyan Research Institute in Iran, genes which are essential in the genetical development of the heart and neuro system in human beings and other living creatures. This

achievement can be utilized in phermaceutical industry, nervous disorders, geneology, and else.

Using nano technology, Iran has achieved progress in some other medical areas such as: making artifical trachea, making the first intelligent mucilage tissues in the world, producing artificial vein from nano fibres, producing new nano crystals for repairing damaged tissues, curing tuberculosis with the help of nano crystals, producing autolog melanocit cells, repairing meylic damages, grafting bone core, and mass production of the essential gene cells, thus placing Iran amongst the top ten countries in the world having this technology.

Summary and Conclusions

Imposing eight years of Iran-Iraq war on Iran and later on different sorts of sanctions against the Islamic Republic, initiating various schemes of Islamophobia, Shiahphobia, and anti-Iran campains both in the region and the world, denying visa to the Iranian students as well as scholars on a large scale, not only did not stop Iran's march on the path of scientific and technological advancement, but pushed the Iranian universities and higher education institutions towards recompensating all shortages and moving in the direction of self-sufficiency in many of the previously untouched fields of communication, defense, nano technology, space industry, etc. Today, unbelievably high number of ISI articles are published in many renouned scientific journals all over the world. In the light of this we many conclude that, although sanctions have had minor effects in the academic circles here and there, but altogether they have been productive and to the benefit of our

country, causing immediate progress in may scientific / technological areas.

Thanks for your patience and listening, and your warm hospitality. May I wish the government and brotherly people of Pakistan success and felicity.